

**CALIFORNIA ENERGY COMMISSION**

1516 Ninth Street  
Sacramento, California 95814

Main website: [www.energy.ca.gov](http://www.energy.ca.gov)



In the matter of,	)	Docket No. 13-IEP-1J
	)	
<i>2013 Integrated Energy Policy Report</i>	)	LEAD COMMISSIONER
<i>(2013 IEPR)</i>	)	DATA REQUEST
	)	RE: Nuclear Power Plant-Related
		Data

---

## REQUEST FOR DATA RELATED TO CALIFORNIA'S NUCLEAR POWER PLANTS

As part of the California Energy Commission's *2013 Integrated Energy Policy Report (2013 IEPR)* proceeding, the IEPR Lead Commissioner is requesting that Pacific Gas and Electric Company (PG&E) and Southern California Edison Company (SCE) provide data related to the Diablo Canyon Power Plant (DCPP) and the San Onofre Nuclear Generating Station (SONGS), as specified in Attachment A. **The deadline for utilities to submit the requested information is Wednesday, May 15, 2013.**

Public Resources Code (PRC) section 25301 directs the Energy Commission to assess and forecast all aspects of energy demand and supply within the State of California at least every two years. These assessments and forecasts serve as the foundation for developing energy analyses and providing policy recommendations to the Governor, Legislature, and other agencies. The broad strategic purposes of these policies are to conserve resources, protect the environment, ensure energy reliability, enhance the state's economy, and protect public health and safety.

To perform these assessments and forecasts, the Energy Commission may request submission of data from electric and natural gas utilities and other market participants. On February 8, 2012, the Energy Commission issued an Order Instituting Informational Proceeding to gather and assess information to assist in preparing the *2013 IEPR*, which is required by PRC section 25302. In that order, the Energy Commission delegated authority in this matter to the IEPR Lead Commissioner who was directed "to preside over this proceeding and take all actions necessary and appropriate to comply with all applicable legal requirements of the Public Resources Code, the Government Code, and implementing regulations."

In 2006, the California Legislature enacted Assembly Bill 1632 (Blakeslee, Chapter 722, Statutes of 2006; codified as Public Resources Code 25303), which directed the Energy

Commission to assess the vulnerabilities of large baseload power plants greater than 1,700 megawatts to a major disruption due to a seismic event or plant aging, the potential impacts of such a disruption, the costs and impacts from waste accumulating at these plants, and major issues related to the future role of these plants in the state. California's two operating nuclear power plants, Diablo Canyon and the San Onofre Nuclear Generating Station, are the only two California plants that meet the 1,700-megawatt baseload criterion.

In 2008, the Energy Commission adopted *An Assessment of California's Nuclear Power Plants: AB 1632 Report*, as required by AB 1632, which made recommendations on nuclear-related efforts for the 2009 IEPR. In 2009, the Energy Commission recommended that PG&E and SCE should complete studies recommended in *AB 1632 Report* and make findings available to the Energy Commission, the CPUC, and the NRC as part of license renewal applications. In 2011, the Energy Commission provided a status report on the utilities' progress on the *AB 1632 Report* recommendations and discussed streamlining and improving power plant licensing processes as well as safety and reliability issues associated with the nuclear power plants.

The March 7, 2013 Scoping Order for the 2013 IEPR identified the topic related to the state's nuclear power plants that would be covered in the 2013 IEPR:

- Report on utility progress in implementing recommendations made in the 2011 IEPR regarding nuclear plant seismic safety, spent fuel storage, station blackouts, and liability coverage.

## **Public Participation**

The Energy Commission's Public Adviser's Office provides the public assistance in participating in Energy Commission activities. If you would like information on how to participate in the 2013 IEPR Proceeding, please contact the Public Adviser's Office at (916) 654-4489 or toll free at (800) 822-6228, by FAX at (916) 654-4493, or by e-mail at [[PublicAdviser@energy.ca.gov](mailto:PublicAdviser@energy.ca.gov)]. If you have a disability and require assistance to participate, please contact Lou Quiroz at (916) 654-5146 at least five days in advance.

Please direct all news media inquiries to the Media and Public Communications Office at (916) 654-4989, or by e-mail at [[mediaoffice@energy.ca.gov](mailto:mediaoffice@energy.ca.gov)]. If you have technical questions about this data request, please contact Joan Walter of the Energy Commission's Executive Office at (916) 654-3873 or by e-mail at [[joan.walter@energy.ca.gov](mailto:joan.walter@energy.ca.gov)]. For general questions regarding the IEPR proceeding please contact Lynette Green, IEPR project manager, by phone at (916) 653-2728 or by e-mail at [[lynette.green@energy.ca.gov](mailto:lynette.green@energy.ca.gov)].

The service list for the 2013 IEPR is handled electronically. Notices and documents for this proceeding are posted to the Energy Commission website at [[www.energy.ca.gov/2013\\_energy policy/index.html](http://www.energy.ca.gov/2013_energy policy/index.html)]. When new information is posted an e-mail will be

sent to those on the energy policy e-mail list server. We encourage those who are interested in receiving these notices to sign up for the list server through the website [[www.energy.ca.gov/listservers/index.html](http://www.energy.ca.gov/listservers/index.html)].

Date: April 10, 2013

---

ANDREW McALLISTER, Ph.D.  
Lead Commissioner  
*2013 Integrated Energy Policy Report*

Electronic Mail Lists: Energypolicy, Nuclear

# ATTACHMENT A

## Section 1: Background

The Energy Commission is requesting that utilities with operating nuclear power plants in California provide the data described in Section 2. These data will provide a foundation for the analyses and recommendations to be presented in the *2013 Integrated Energy Policy Report*. The requested information is also needed to continue the Energy Commission's nuclear policy assessment initiated in 2005 and continued through the *2005, 2007, 2008, 2009 and 2011 IEPRs*, as well as to support legislative mandates and provide information needed to support the Energy Commission's input into federal nuclear waste management proceedings.

To carry out these regular assessments of expected and needed electricity supplies, "the Commission shall conduct... (an) assessment of the availability, reliability, and efficiency of the electricity and natural gas infrastructure and systems including, but not limited to,...western regional and California electricity and transmission system capacity and use." (PRC Section 25303(a)[3]).

If respondents have questions about the information being requested, Energy Commission staff will work with the utilities to clarify the information requests. General questions about these data requests should be directed to Joan Walter at [joan.walter@energy.ca.gov] or by phoning (916) 654-3873.

## Filing Instructions

**The general instructions for responding to these data requests are provided below:**

Each section and/or question identifies the specific nuclear power plant associated with the section's/question's data requests. We encourage Southern California Edison Company (SCE) to coordinate responses with its co-owners for San Onofre Nuclear Generating Station (SONGS)-related data requests.

If the respondent believes certain data or information is confidential or not intended to be released publicly, the respondent should provide a specific rationale for claiming confidentiality (please see below). Further, the respondent should provide a reference to specific federal or state laws or regulations that provide the confidentiality treatment sought by the respondent.

Unless otherwise specified, the period for which data and documents are requested is **2008 through the most recent year that information is available (for example, 2012).**

The requested information should be provided in digital/electronic format such as CD/DVD-ROM, Portable Document Format (PDF) files, Excel spreadsheets, or similar formats.

Links (URLs) to documents on Internet websites are acceptable. However, an URL link should be verified as working and must point to the specific document and not be general (for example, a general link to [www.nrc.gov] is not acceptable).

## When to File

The Energy Commission requests that the utilities provide the Energy Commission the information, as described below, on or before **May 15, 2013**. At a later date, the *2013 IEPR* Lead Commissioner, Andrew McAllister, may direct that additional data be filed to assess particular issues or policy proposals.

## Who Must File

California utilities owning and/or operating the Diablo Canyon Nuclear Power Plant and San Onofre Nuclear Generating Station are requested to file information as indicated below. Please note: Where the information is available through another forum, utilities are asked to identify a web link and a contact person (name, phone number, and e-mail address).

## What Must be Filed

For all filings, parties are requested to submit the following:

- A brief cover letter, addressed to the Energy Commission's Docket Office;
- A compact disc containing all requested data; or
- A paper copy of requested data if not available in electronic format.

## Where to File

Submit all requested data to:

California Energy Commission  
Docket Office  
Attention: **Docket 13-IEP-1J**  
1516 Ninth Street, MS-4  
Sacramento, CA 95814-5512

Data that is submitted with an Application for Confidential Designation, however, must be sent to the Executive Director of the Energy Commission rather than to the Docket Office, as explained in the next section.

## How to Apply for Confidential Designation of Submitted Data

The Executive Director of the Energy Commission has the overall responsibility for determining what information submitted with an application for confidentiality to the Energy Commission will be deemed confidential. Parties who seek such a designation must identify the specific information and describe why the information should be protected from release, the length of time such protection is sought, and whether the information can be released in aggregated form.

Certain categories of information provided to the Energy Commission, when submitted with a request for confidentiality, will be automatically designated as confidential and do not require an application. The types of data that are eligible and the process for obtaining this confidential designation are specified in California Code of Regulations, Title 20, section 2505(a)(5).

The process for requesting a confidential designation for the data is described below. A more detailed description of this process is provided in Title 20 of the California Code of Regulations, Section 2501 et seq. (See *Energy Commission Regulations*).<sup>1</sup> Parties must make a separate written application to the Executive Director that specifies which data within the body of all submitted material warrants a confidential designation. A document or electronic file bearing a “confidential” stamp will not suffice. A formal application is necessary.

The following information items are needed by the Executive Director to make a confidentiality determination:

1. A printed cover letter bearing the following address:

Rob Oglesby, Executive Director  
California Energy Commission  
1516 Ninth Street, MS 39  
Sacramento, California 95814-5504

2. The data. For this data request, the data must be submitted on a compact disc that bears the name of the utility and the following sub-docket number: **Docket 13-IEP-1J**. The confidential information must be clearly and properly labeled.
3. A signed and dated “penalty of perjury” certification. This certification must be included in the hard copy and electronic format, containing the following paragraphs, signature line, and signature by the person primarily responsible for preparing the application:

“I certify under penalty of perjury that the information contained in this application for confidential designation is true, correct, and complete to the best of my knowledge.”

And,

---

<sup>1</sup> California Energy Commission regulations can be accessed via the following link:  
<http://www.energy.ca.gov/siting/title20/index.html>

“I certify that I am authorized to make the application and certification on behalf of (company, firm, partnership, trust, corporation, or other business entity, or an organization or association.)

4. Completeness. The application for confidentiality submitted to the Executive Director may be deemed incomplete and returned to the applicant if the application does not contain the following:
  - Identification of the information being submitted, including title, date, file size (for example, pages, sheets, MB), and sub-docket number;
  - Description of the data for which confidentiality is being requested;
  - Description of the length of time for which confidentiality is being sought, with an appropriate justification, for each confidential data category request;
  - Identification of applicable provisions of the California Public Records Act (Government Code Section 6250 *et seq.*), and/or other laws, for each confidential data category request;
  - A statement that describes how each category of confidential data may be aggregated with other data for public disclosure;
  - Description of how the information is kept confidential by the applicant and whether it has ever been disclosed to a person other than an employee of the applicant, and if so, under what circumstances, and
  - A statement attesting that: a) the specific records to be withheld from public disclosure are exempt under provisions of the Government Code, or b) the public interest in nondisclosure of these particular facts clearly outweighs the public interest in disclosure.

The items listed above should be hand-delivered or mailed to the Executive Director’s office in a sealed package (or envelope) marked “Confidential.”

If the filer is seeking confidential designation of information that is substantially similar to information that was previously determined to be confidential by the Commission, the application need only contain a certification, identical to that filed with the application for confidential designation of new information, stating that fact and that all the facts and circumstances relevant to that prior determination of confidentiality remain unchanged.

Application packages deemed incomplete will not be reviewed by the Executive Director. Instead, incomplete application packages will be placed in a “suspense” file, and the filer will be notified by mail and by e-mail about the deficiencies in the application. The filer has 14 calendar days to correct the deficiencies and to deliver to the Executive Director an amended *Application for Confidential Designation*, including the signed and dated “penalty of perjury” certification. If the Executive Director has not received the amended application within 14 calendar days from the date the letter was received, all information associated with the deficient application package will be deemed public information and docketed accordingly.

Once an application package is complete, the Executive Director of the Energy Commission has 30 days to render a decision regarding the confidentiality request. Confidentiality determination letters are signed by the Executive Director.

If the letter states that the Executive Director has determined that the submitted data does not warrant confidential designation, then the applicant has 14 calendar days to appeal the Executive Director's decision to the full Commission. More specific questions about confidentiality may be directed to Kerry Willis at [kerry.willis@energy.ca.gov] or (916) 654-3967.

## **Section 2: Nuclear Power Plant Data Request**

### **Progress in Completing AB 1632 Report/2008 IEPR<sup>2</sup>** **Recommendations**

#### **A. Seismic Hazards at Diablo Canyon**

1. Please report on the overall status of ongoing efforts to understand the seismic hazards affecting the Diablo Canyon site through its Long Term Seismic Program (LTSP) and the results of the research efforts.
2. Please discuss whether updates to ground motion models developed to date through the Senior Seismic Hazard Analysis Committee (SSHAC) Level 3 process<sup>3</sup> indicate larger than expected seismic hazards at Diablo Canyon and, if so, whether the plant was built with sufficient design margins to continue operating reliably after experiencing these larger ground motions. (Diablo Canyon)

#### **B. Seismic Hazards at SONGS**

1. a. Please report on the status of SCE's efforts to develop an active seismic hazards research program for SONGS (similar to PG&E's LTSP) to assess whether there are sufficient design margins at the nuclear plant to avoid major power disruptions.
- b. Please include in the status report a discussion of how the research program 1) prioritizes and includes further investigations into the seismic setting at SONGS and 2) assesses whether recent or current seismic, geologic, or ground motion research in the vicinity of SONGS has implications for the long-term seismic vulnerability of the plant. (SONGS)

---

<sup>2</sup> The Energy Commission adopted in November 2008 several recommendations regarding Diablo Canyon and SONGS (see An Assessment of California's Nuclear Power Plants: AB 1632 Report, CEC-100-2008-009-MF).

<http://www.energy.ca.gov/2008publications/CEC-100-2008-009/CEC-100-2008-009-CMF.PDF>

This section includes requests for information for continued reporting from the utilities (beginning with the 2009 IEPR) on progress being made in carrying out these recommendations.

<sup>3</sup> The SSHAC Level 3 process is a formal, structured procedure set forth by the Nuclear Regulatory Commission (NRC) for developing Seismic Source Characterization (SSC) and Ground Motion Characterization (GMC) for use in performing probabilistic seismic hazard analyses.

<http://www.nrc.gov/reading-rm/doc-collections/reg-guides/power-reactors/rq/01-208/01-208.pdf>  
<http://pbadupws.nrc.gov/docs/ML1211/ML12118A445.pdf>



## C. Tsunami Hazards at Diablo Canyon

PG&E's response to the 2011 Nuclear Power Plant Data Request E.12 referenced the April 9, 2010 draft report entitled "Methodology for Probabilistic Tsunami Hazard Analysis (PTHA): Trial Application for the Diablo Canyon Power Plant site" and noted that while the study was *"not directly comparable with previous results and analysis, it was concluded that the PTHA did not identify new hazard information that warranted inclusion into the DCP design and license basis."*

1. Please submit to the Energy Commission an updated tsunami hazard study for DCP incorporating the following new information and research conducted since the draft 2010 PTHA was completed:
  - a. the Energy Commission's 2012 California Climate Change Assessments specific to sea level rise and extreme wave characteristics<sup>4</sup>;
  - b. any applicable Pacific Earthquake Engineering Research Center (PEER) research reports (e.g., Probabilistic Tsunami Hazard in California, October 2010<sup>5</sup>); and
  - c. improved scientific understanding of tsunamis and hazard assessment, including lessons learned from the 2011 Tōhoku/Great East Japan earthquake and tsunami.<sup>6</sup>
2. Based on the updates to the tsunami study, identify any new hazards that warrant inclusion into the DCP design and license basis.

## D. Tsunami Hazards at SONGS

SCE's response to the 2011 Nuclear Power Plant Data Request E.12 referenced the April 15, 2011 testimony filed by SCE at the CPUC in Application (A.) 11-04-006:

*"SCE began work on a Probabilistic Tsunami Hazard Analysis (PTHA) in 2010 in parallel with the 2010 Probabilistic Seismic Hazard Analysis (PSHA) review to ensure that the seismic source characterizations were consistent between the two reports. The 2010 PTHA is nearing completion... Available data from the recent Tohoku earthquake will be used in the completion of the 2010 PTHA. Tsunami evaluations are forecast to take about a year and a half to complete."*<sup>7</sup>

---

<sup>4</sup> [http://climatechange.ca.gov/climate\\_action\\_team/reports/third\\_assessment/index.html](http://climatechange.ca.gov/climate_action_team/reports/third_assessment/index.html)  
<http://www.energy.ca.gov/2012publications/CEC-500-2012-011/CEC-500-2012-011.pdf>

<sup>5</sup> [http://peer.berkeley.edu/publications/peer\\_reports/reports\\_2010/web\\_PEER2010\\_108\\_THIOetal.pdf](http://peer.berkeley.edu/publications/peer_reports/reports_2010/web_PEER2010_108_THIOetal.pdf)

<sup>6</sup> Lessons Learned from the Great East Japan Earthquake: Hazard Information and Damage Scenarios to Inform Effective Countermeasures to Extreme Events (September 28, 2011)

[http://www.gfdrr.org/sites/gfdrr.org/files/Chapter\\_11-Japan-Lessons\\_Learned\\_from\\_the\\_Great\\_East\\_Japan\\_Earthquake.pdf](http://www.gfdrr.org/sites/gfdrr.org/files/Chapter_11-Japan-Lessons_Learned_from_the_Great_East_Japan_Earthquake.pdf)

<sup>7</sup> [http://www3.sce.com/sscc/law/dis/dbattach3e.nsf/0/DB102F12D426936988257877008313DD/\\$FILE/A.11-04-006+SCE+Seismic+Application+Testimony.pdf](http://www3.sce.com/sscc/law/dis/dbattach3e.nsf/0/DB102F12D426936988257877008313DD/$FILE/A.11-04-006+SCE+Seismic+Application+Testimony.pdf)

1. Please submit to the Energy Commission an updated tsunami hazard study for SONGS incorporating the following new information and research conducted since the 2010 PTHA was completed:
  - a. the Energy Commission's 2012 California Climate Change Assessments specific to sea level rise and extreme wave characteristics<sup>8</sup>;
  - b. any applicable Pacific Earthquake Engineering Research Center (PEER) research reports (e.g., Probabilistic Tsunami Hazard in California, October 2010<sup>9</sup>); and
  - c. improved scientific understanding of tsunamis and hazard assessment, including lessons learned from the 2011 Tōhoku/Great East Japan earthquake and tsunami<sup>10</sup>.
2. Based on the updates to the tsunami study, identify any new hazards that warrant inclusion into the SONGS design and license basis.

## **E. Vulnerability of Power Plant Buildings and Structures**

1. Please report on the progress of PG&E's and SCE's investigations on the extent to which the respective plants' non-safety-related systems, structures, and components (SSCs) comply with current building codes and seismic design standards for non-nuclear power plants and report to the Energy Commission the findings of such investigations. (Diablo Canyon, SONGS)
2.
  - a. Please report on the progress of PG&E's and SCE's evaluations of the seismic vulnerability and reliability implications for the nuclear plants' non-safety related SSCs from changes to seismic design standards that have occurred since the plants were designed and built.
  - b. The progress report should 1) consider IAEA (International Atomic Energy Agency) Standards and Safety Reports and any retrofits that the plant owners may have undertaken, and 2) discuss how the evaluations focused on those plant systems or components whose failure could lead to extended outages. (Diablo Canyon, SONGS)
3. Please report on the status of PG&E's and SCE's plant component repair/replacement plans. The status report should describe how the plans:
  - a. identify key plant systems or components;
  - b. estimate the time needed to repair or replace key plant systems or components that could cause a prolonged plant outage as a result of earthquake damage, and;
  - c. consider the fragility of components both in their operating positions and when relocated for refueling or plant maintenance. (Diablo Canyon, SONGS)

---

<sup>8</sup> Ibid.

<sup>9</sup> Ibid.

<sup>10</sup> Ibid.

## **F. Vulnerability of Spent Fuel Storage Facilities to Seismic and Terrorist Events**

1. Please provide a progress report on the return of the spent fuel pools to open racking arrangements. (Diablo Canyon, SONGS)

## **G. Vulnerability of Roadways and Transmission Systems**

As part of license renewal feasibility studies and to protect plant assets and equipment in an emergency, PG&E and SCE were to reassess the adequacy of access roads to the plants and surrounding roadways for allowing emergency response personnel to reach the plants and for allowing local communities and plant workers to evacuate.

1. Please provide the most recent roadway assessment completed to satisfy this recommendation. (Diablo Canyon, SONGS)

## **H. Vulnerability of Plant Aging-Related Degradation**

For many years, SONGS has been under scrutiny by the U.S. Nuclear Regulatory Commission (NRC) for failure to address several longstanding safety culture issues. In September 2011, based on the results of inspections at SONGS and a significant reduction in safety culture allegations in 2011 compared to 2010, the NRC determined that SCE has made reasonable progress in addressing the worker safety culture issues.<sup>11</sup>

1. Please provide a progress report on how SONGS safety culture issues are being addressed. (SONGS)

## **I. Economic, Environmental and Policy Issues**

As part of the license renewal feasibility studies for Diablo Canyon and SONGS, the CPUC was to require PG&E and SCE to conduct a detailed study of the local economic impacts of shutting down the nuclear plants compared with alternate uses of the site.

1. Please provide the most recent local economic impact study completed to satisfy this recommendation. (Diablo Canyon, SONGS)

---

<sup>11</sup> NRC letter to Peter Dietrich, SONGS, September 6, 2011.  
<http://pbadupws.nrc.gov/docs/ML1124/ML112490114.pdf>

## **J. Nuclear Waste Accumulation**

As part of license renewal feasibility studies, PG&E and SCE were to assess the costs of disposing of low-level waste that will be generated during a 20-year license extension. The assessments were to include the cost to dispose of low-level waste that would be generated from major capital projects that might be required over this period. PG&E and SCE were also to provide information on their plans for storage and disposal of low-level waste and spent fuel through plant decommissioning.

1. Please provide the most recent disposal cost assessments and low-level waste (categorized as Class A, B, C, or Greater-than Class-C) and spent nuclear fuel storage and disposal plans completed to satisfy this recommendation. (Diablo Canyon, SONGS)

## **K. License Renewal Issues for State Policymakers**

1. Please provide a status report on and the results of all license renewal feasibility studies in-progress or completed for license applications currently under review or planned for submittal with the NRC including but not limited to:
  - a. the adequacy of the plants' maintenance programs and safety cultures;
  - b. plans for waste storage, transport and disposal;
  - c. seismic hazard and vulnerability assessments;
  - d. the life cycle or "cradle-to-grave" environmental and economic impact evaluation of the nuclear plants compared with alternative generating and transmission resources;
  - e. contingency plans in the event the state's nuclear power plants have prolonged outages;
  - f. implications for grid reliability if these plants shut down;
  - g. assessments of the options and costs for complying with the State Water Resources Control Board policy requiring a phase-out of once-through cooling, and;
  - h. the overall economic and environmental costs and benefits of license extension. (Diablo Canyon, SONGS)

## **Progress in Completing 2011 IEPR Recommendations**

### **A. Seismic Issues**

1. Please provide an update on the progress in completing the AB 1632 Report-recommended seismic studies, including the technical details and any significant

updates of seismic hazard study plans completed, in progress or proposed since 2011 (as recommended in the *2008 IEPR Update*) and the associated findings as applicable. (Diablo Canyon, SONGS)

2. Please provide the reports, findings and recommendations from the California Independent Peer Review Panel (IPRP)/ Independent Peer Review Group (IPRG) on seismic studies, including onshore and offshore seismic studies funded by CPUC Decision's 10-08-003 and Decision 12-05-004. (Diablo Canyon, SONGS)
3. Please provide an update on the composition of SONGS' Seismic Advisory Board and efforts SCE has made in to include independent seismic experts with no current or prior professional affiliation with utilities, including SCE or PG&E, or their consultants. (SONGS)

## **B. Spent Fuel Pool and Independent Spent Fuel Storage Installation**

1. Please provide an update on progress in adding safety-related instrumentation (capable of withstanding design basis natural phenomena) to monitor in the control room key spent fuel pool parameters, for example, water level, temperature, and radiation levels, during a severe accident in which radiation levels within the spent fuel pool building are unsafe. (Diablo Canyon, SONGS)
2. Please provide a progress report on the transfer of spent fuel from pools into dry casks (in compliance with NRC spent fuel cask and pool storage requirements). (Diablo Canyon, SONGS)
3. Please provide an updated evaluation of the potential long-term impacts and projected costs of spent fuel storage in pools versus dry cask storage of higher burn-up fuels in densely packed pools, and the potential degradation of fuels and package integrity during long-term wet and dry storage and transportation offsite. (Diablo Canyon, SONGS)

## **C. Station Blackout**

1. Please provide a progress report in addressing the lessons learned from the station blackout at the Fukushima Daiichi Nuclear Power Plant and how well-equipped the plants are to safely withstand a station blackout lasting longer than seven days. Include in the progress report:
  - a. any significant changes, including estimated costs, associated with NRC requirements to address station blackout; and
  - b. arrangements for accessing emergency backup generation and fuel, responding to multiple unit events, seismically and flooding protected equipment and addressing the lessons learned from Fukushima. (Diablo Canyon, SONGS)

2. Please provide a progress report on the adequacy of trained people, equipment, and external support, including written agreements, for providing emergency power equipment and fuel for handling an extended station blackout. (Diablo Canyon, SONGS)

## **D. Nuclear Plant Liability Coverage**

Based on the Fukushima experiences, PG&E and SCE were to provide a comprehensive study to the Energy Commission on the adequacy of Price-Anderson Act liability coverage for a severe event at Diablo Canyon or SONGS resulting in large offsite releases of radioactive materials.

1. Please provide the comprehensive study on the adequacy of Price-Anderson Act liability coverage for a severe event. (Diablo Canyon, SONGS)

## **E. Fukushima Lessons Learned**

1. Please provide a progress report and cost estimate for carrying out the recommendations of the NRC Near-Term Fukushima Task Force Report, including orders for Mitigation Strategies to Respond to Extreme Natural Events Resulting in the Loss of Power at Plants and for Enhancing Spent Fuel Pool Instrumentation. (Diablo Canyon, SONGS)
2. Please provide a progress report on the adequacy of resources, training, and equipment to cope with severe plant events including a station blackout combined with natural or man-made events (earthquake, flooding, fires, or terrorist attack). Include a discussion of the availability of:
  - a. seismically robust and flood protected essential safety systems and equipment;
  - b. suitably shielded, ventilated, and well-equipped facilities needed for the workers to manage the accident;
  - c. ability to respond to multiple events and multiple-unit events; and
  - d. trained onsite and offsite responders for a long-term station blackout or loss of all heat sinks. (Diablo Canyon, SONGS)

## **F. Plant Safety**

1. Please provide a status report on efforts to improve the safety culture at Diablo Canyon and SONGS and on the NRC's evaluation of these efforts and overall plant performance. (Diablo Canyon) (SONGS - see also AB1632 Report/2008 IEPR H.1)

## **Other Issues**

### **A. Environmental Impacts – Diablo Canyon**

The NRC licenses the operation of domestic nuclear power plants and provides for license renewal. License renewal applications must include an environmental report (10 CFR 54.23) with the content as prescribed in 10 CFR 51. While NRC regulations do not require an applicant's environmental report to contain analyses of the impacts of those environmental issues that have been generically resolved [10 CFR 51.53(c)(3)(i)], the regulations do require that an applicant identify any new and significant information of which the applicant is aware [10 CFR 51.53(c)(3)(iv)]. The purpose of this requirement is to alert the NRC staff to such information so the staff can determine whether to seek the Commission's approval to waive or suspend application of the rule with respect to the affected generic analysis.<sup>12</sup>

In Chapter 5 - Assessment of New and Significant Information of Appendix E - Applicant's Environmental Report<sup>13</sup> (Report) submitted to the NRC November 2009 as part of the Diablo Canyon License Renewal Application, PG&E concludes that as a result of the assessment, PG&E is aware of no new and significant information regarding the environmental impacts of renewing DCP's operating licenses (pg. 5-2).

However, PG&E states "Several issues have been deemed new issues, but their impacts are not considered significant. These issues are: (1) groundwater monitoring for tritium, (2) long-term storage of low level radioactive waste, (3) the potential presence of a fault, 15 km in length, located approximately 1 km offshore, and (4) the September 11, 2001 terrorist attack.

#### **A. Groundwater Monitoring for Tritium**

In Chapter 5 of the Report, PG&E describes groundwater sampling and monitoring initiated in response to the Nuclear Energy Institute (NEI) Groundwater Protection Initiative (NEI 07-07) which was launched to provide an industry-wide approach to unexpected groundwater and soil releases at operating and decommissioned nuclear power plants. In support of this industry initiative, DCP implemented the DCP Radiological Environmental Monitoring Program (REMP). Results of this monitoring program are submitted to local, State, and Federal agencies on an annual basis. The following are excerpts from the Report (pg. 5-3):

*"In 2008, PG&E discovered tritium levels in excess of 400 picocuries per liter (pCi/L) beneath the DCP powerblock. The low levels and the location of the tritium found in groundwater at DCP do not indicate a leak from the spent fuel pool or any other major source of tritium. Instead, the low levels are consistent with the minor tritium "wash-out" pathways..."*

---

<sup>12</sup> Generic Environmental Impact Statement (GEIS) for License Renewal of Nuclear Plants (NUREG-1437) <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1437/>.

<sup>13</sup> <http://www.nrc.gov/reactors/operating/licensing/renewal/applications/diablo-canyon/dcpp-er.pdf>.

PG&E's 2011 Annual Radioactive Effluent Release Report<sup>14</sup> submitted to the NRC on April 30, 2012 states in Section VII (G) - Sub-surface water radioactive contamination (pg. 41):

*"Recent industry events have identified equipment leaks containing low levels of radioactivity, resulting in contaminated ground water and storm water radioactivity concentrations that may leave the plant sites. Suspected plant equipment leaks that could result in such an event at Diablo Canyon are documented in the corrective action program (CAP). Analysis of samples of sub-surface water at Diablo Canyon has indicated the presence of tritium."*

PG&E's 2011 Annual Radiological Environmental Operating Report<sup>15</sup> (AREOR) (Section 5.2 – Additional Groundwater Sampling Overview) indicates:

*"concentrations of tritium were detected in three monitoring wells beneath the DCPD power block...It should be noted that hydro geological studies of the DCPD site indicate that any groundwater (subsurface) flow beneath DCPD would flow toward the Pacific Ocean."*

The 2011 AREOR also indicates that specific ranges of tritium detected in these monitoring wells for 2011 are as follows:

- Observation Well 01 (401 to 710 pCi/L) of 4 samples collected for tritium analysis
- Observation Well 02 (1,140 to 1,340 pCi/L) of 4 samples collected for tritium analysis
- Drywell 115 (11,800 to 64,800 pCi/L) of 7 samples collected for tritium analysis.

The California Office of Environmental Health Hazard Assessment (OEHHA) has established a Public Health Goal (PHG) of 400 pCi/L for tritium in drinking water<sup>16</sup>.

1. Please provide the following information:

- a. documentation to support PG&E's 2009 conclusion that the environmental impacts associated with tritium contamination in the groundwater are SMALL<sup>17</sup> by NRC standards;
- b. a discussion of any new information since 2009 that may alter the above referenced conclusion (e.g., increased tritium contamination in the groundwater, new or previously undiscovered sources of tritium contamination, etc.);
- c. the suspected source(s) of the tritium discovered and how that determination was made;

---

<sup>14</sup> <http://pbadupws.nrc.gov/docs/ML1212/ML12128A374.pdf>

<sup>15</sup> <http://pbadupws.nrc.gov/docs/ML1212/ML12128A479.pdf>

<sup>16</sup> <http://www.oehha.ca.gov/water/phg/allphgs.html>.

<sup>17</sup> SMALL--For the issue, environmental effects are not detectable or are so minor that they will neither destabilize nor noticeably alter any important attribute of the resource. For the purposes of assessing radiological impacts, the Commission has concluded that those impacts that do not exceed permissible levels in the Commission's regulations are considered small as the term is used in this table.

<http://www.nrc.gov/reading-rm/doc-collections/cfr/part051/part051-appb.html>



- d. how PG&E concluded that tritium found in groundwater at DCPD does not indicate a leak from the spent fuel pool;
- e. National Pollutant Discharge Elimination System (NPDES) Annual Summary Reports on Discharge Monitoring at DCPD for 2009 through 2012;
- f. a determination of whether the levels of tritium have increased in site groundwater between 2008 and 2012;
- g. the status of remediation, if any, for tritium contamination below the DCPD facility;
- h. an explanation of why PG&E believes tritium contamination beneath the powerblock and in the groundwater at DCPD does not pose a health risk to the public or employees of DCPD;
- i. an explanation of why PG&E believes DCPD site releases of tritiated water above 400 pCi/L do not have a harmful effect on living organisms in the marine environment (e.g. causing genetic damage or by transport along the food chain); and
- j. documentation demonstrating how DCPD site releases of tritiated groundwater or tritiated stormwater are in compliance with the NPDES permit and the Clean Water Act, the NRC operating license and EPA standards (e.g., meeting concentration limits for release into the general environment).

B. Presence of the Shoreline Fault (offshore of San Luis Obispo County)

A recent report by Jeanne Hardebeck (Hardebeck Report) published in Bulletin of the Seismological Society of America (Vol. 103, No. 1, pp.447-462, February 2013) concluded that:

“The Optimal Anisotropic Dynamic Clustering (OADC) results show that the Shoreline fault is a single continuous structure that connects to the Hosgri fault. Discontinuities smaller than about 1 km may be undetected, but would be too small to be barriers to earthquake rupture. The Hosgri fault dips steeply to the east, while the Shoreline fault is essentially vertical, so the Hosgri fault dips towards and under the Shoreline fault as the two faults approach their intersection. The focal mechanisms generally agree with pure right-lateral strike-slip on the OADC planes, but suggest a non-planar Hosgri fault or another structure underlying the northern Shoreline fault.”

This conclusion may have major implications for estimates of the earthquake potential for this fault and appears to conflict with PG&E's assertion that the Shoreline fault is segmented. The Hardebeck Report further states:

“The Shoreline fault most likely transfers strike-slip motion between the Hosgri fault and other faults of the Pacific–North America plate boundary system to the east. A hypothetical earthquake rupturing the entire known length of the Shoreline fault would have a moment magnitude of 6.4–6.8. A hypothetical earthquake rupturing the Shoreline

fault and the section of the Hosgri fault north of the Hosgri–Shoreline junction would have a moment magnitude of 7.2–7.5.”

1. Please provide documentation to support PG&E’s conclusion that the presence of the Shoreline fault is still not considered significant, including any new information since 2009;
2. Please explain the apparent discrepancies between the Hardebeck Report and PG&E’s assertions about the Shoreline fault (i.e., low or no potential for interaction between the Shoreline and the Hosgri faults).
3. Discuss the implications for seismic hazard at Diablo Canyon related to the design basis of the plant, and how PG&E will address this issue in future seismic research plans.

## **B. Environmental Impacts – SONGS**

In response to the 2009 Nuclear Power Plant Data Request A.2 requesting copies of any studies, evaluations or assessments of radioactive material leaks, or other hazardous materials discharges, particularly tritium, Southern California Edison provided information on the August 2006 discovery of tritiated groundwater at SONGS. The information included the January 3, 2007 Hydrologic Assessment of Potential Impacts to San Clemente Groundwater Resources of Tritiated Groundwater at SONGS (Assessment).

The Assessment noted that during the decommissioning and removal of Unit 1, it was necessary to conduct groundwater dewatering below the foundation of the containment sphere. The extracted groundwater was tested...and low levels of tritium were detected during the week of August 7, 2006. Tritium concentrations found in the water ranged from 50,000 to 330,000 pCi/L. The extracted groundwater was discharged with other site water in compliance with the facility NRC operating license to the SONGS ocean outfall.

The Assessment also concluded that the discovery of tritium contaminated groundwater at SONGS Unit 1 did not pose a threat to City of San Clemente groundwater resources. This conclusion was supported by the local groundwater gradient, among other things, and the fact that the “tritium impacted groundwater at SONGS flows southwest a short distance to the Pacific Ocean.”

Finally, the Assessment states that SCE indicated they were planning to conduct a hydrogeologic and groundwater quality assessment of the entire SONGS facility (Units 1, 2 and 3).

1. Please provide the following information:
  - a. the status of remediation, if any, for tritium contamination below the SONGS facility;
  - b. the suspected source of the tritium beneath SONGS Unit 1;
  - c. a copy of the hydrogeologic and groundwater quality assessment conducted by SCE of the entire SONGS facility (Units 1, 2 and 3);

- d. the diluted tritium concentration level in the extracted groundwater before discharge into the ocean outfall in 2006;
- e. the accepted level of tritium concentration in water for discharge into the ocean to be in compliance with the NRC operating license and with the state NPDES permit; and
- f. documentation demonstrating how SONGS site releases of tritiated groundwater are in compliance with the NPDES permit and the Clean Water Act, the NRC operating license and EPA standards (e.g., meeting concentration limits for release into the general environment).

## **C. Evacuation Planning**

- 1. PG&E's response to the 2009 Nuclear Power Plant Data Request M.6 indicated that another full update of the Evacuation Time Assessment (ETA) for Transient and Permanent Population from Various Areas Within the Plume Exposure Pathway Emergency Planning Zone would be prepared in 2012. Please provide a copy of the full update of the assessment reflecting 2010 census data and including a comparative assessment of the evacuation time estimates following an earthquake event. (Diablo Canyon)
- 2. SCE's response to the 2009 Nuclear Power Plant Data Request M.6 indicated that as a matter of good emergency planning practice, an Evacuation Time Estimate (ETE) is conducted at SONGS approximately every six years. An ETE was performed in June 2007 by Wilbur Smith Associates. Please provide an updated Evacuation Time Estimate (ETE) for 2013 including earthquake assumptions, road closures and updated population data, transportation facilities, schools and special institutions, and the emergency response of the various jurisdictions in the SONGS EPZ. (SONGS)

## **D. Spent Nuclear Fuel Generation**

- 1. Please provide any updates to Table 12: Waste Generated at Diablo Canyon (Units 1 and 2) and SONGS (Unit 1, 2 and Unit 3) from the *AB 1632 Assessment of California's Operating Nuclear Plants: Final Report*, October 2008 (CEC-100-2008-005-F, page 213). (Diablo Canyon, SONGS)

## **E. Spent Nuclear Fuel Storage**

- 1. Please provide any updates to Table 14: On-Site Spent Fuel Capacity (number of assemblies) from the *AB 1632 Assessment of California's Operating Nuclear Plants: Final Report*, October 2008 (CEC-100-2008-005-F, page 217).